# Macroprudential frameworks, implementation and relationship with other policies in Korea

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## Abstract

In Korea, the authorities responsible for financial stability carry out their respective roles under their individual purviews. Macroprudential (financial stability) policy is conducted by sharing views about financial stability conditions and responding jointly in times of crisis through various channels for cooperation. The macroprudential policy instruments currently used in Korea include loan-to-value and debt-to-income regulations, countercyclical capital buffers, regulation of the domestic currency loan-to-deposit ratio (LDR), and FX-related macroprudential measures (the Macro-prudential Stability Levy and leverage caps on banks' FX derivatives positions). The Bank of Korea (BOK) was given responsibility for financial stability under the revised Bank of Korea Act (which took effect in 2011). To this end, the Bank pre-emptively identifies potential risks in the financial system while conducting its monetary policy, as well as through its Financial Stability Report and Financial Stability Meetings. The BOK also shares its perceptions of financial conditions and responds jointly with the relevant government agencies at a macroprudential level.

Keywords: financial stability, macroprudential policy, loan-to-value ratio, debt-to-income ratio, monetary policy, communication

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# 1. Macroprudential (financial stability) policy frameworks

## 1.1 Governance

In Korea, the authorities responsible for financial stability carry out their respective roles under their individual purviews, while operating the macroprudential (financial stability) policy framework by sharing views about financial stability conditions and responding jointly in times of crisis through various channels for cooperation.

## 1.2 Roles of individual agencies

The agencies responsible for financial stability policy in Korea include the Ministry of Strategy and Finance (MOSF), the Bank of Korea (BOK), the Financial Services Commission (FSC), the Financial Supervisory Service (FSS), and the Korea Deposit Insurance Corporation (KDIC).

The MOSF is responsible for the formulation, overall control and adjustment of economic and fiscal policies, and conducts foreign exchange-related tasks under the Government Organization Act. From a microeconomic perspective, the MOSF has the authority to carry out real estate tax policy, which is important for financial stability.

The BOK not only establishes and carries out monetary policy under the Bank of Korea Act, but also has the responsibility for taking into account financial stability in its monetary policy implementation.

In normal times, the BOK can indirectly influence various financial market price variables (interest rates, stock prices and the exchange rate) and the total credit supply through monetary policy implementation.

In the event of financial instability, the BOK functions as the market-maker of last resort or the lender of last resort, thus providing liquidity to the financial markets and individual financial institutions.

The FSC is responsible for supervising the financial industry and financial institutions, and for setting policies related to the approval, management and supervision of the capital markets under the Act on Establishment, etc. of the Financial Services Commission. The FSS is in charge of inspecting and supervising financial institutions.

The KDIC is responsible for managing and operating the deposit insurance funds and resolving ailing institutions under the Depositor Protection Act.

Financial stability functions as shared responsibilities in Korea Table 1

| Stability of value of money | Ex ante actions for financial stability | |
|---|---|---|
| | Macroprudential policy | Microprudential policy |
| Monetary policy<br>Payment and settlement system<br>Reserve requirement system<br>FX policy | Systemic risk surveillance and policy responses | Supervision of individual institutions |
| The Bank of Korea | MOSF | FSC·FSS |
| Ex post responses | | |
| Deposit insurance payouts<br>Resolution of financial institutions | Crisis management<br>Injection of public funds | Lender of last resort<br>Foreign reserve operations |
| KDIC<br>FSC·FSS | MOSF<br>FSC | BOK |

### 1.3 Cooperation framework for financial stability

With the financial stability roles being shared among the multiple agencies in this way, during normal times these agencies share their perceptions about domestic and international financial and economic conditions. During emergencies, they operate channels for discussion to facilitate a prompt and effective joint response.

The BOK shares perceptions about financial stability conditions by having its Senior Deputy Governor attend the vice presidential-level Macroeconomic and Financial Stability Meetings and the Financial Services Commission meetings.

In addition to these high-level channels of cooperation, the agencies have also recently expanded channels for information-sharing and opinion exchanges by, for instance, setting up a working-level Consultative Group for Managing Household Debt and a working-level stress test council.

## 2. Operation of macroprudential policy in Korea

### 2.1 Korea's macroprudential policy measures

#### Housing sector-related policy: LTV and DTI regulations

As housing prices surged in line with abundant market liquidity and rising housing demand since 2000, home mortgage lending increased sharply. This led to the introduction of loan-to-value (LTV) regulations in September 2002, and of debt-to-income (DTI) regulations in August 2005.

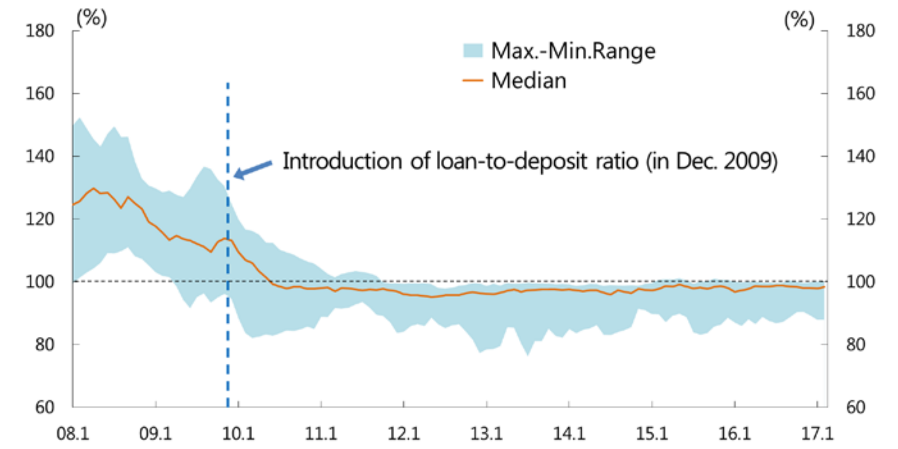
These regulations were operated flexibly, being tightened or loosened in accord with housing price and home mortgage lending trends.[4] This helped to slow the high rate of growth in household loans, one of the major factors posing domestic systemic risk.

## Loan-to-deposit ratio regulation

This regulation was introduced to curb the increase in loans that were dependent on banks' wholesale funding (CDs + RPs + cover bills + bank debentures) in December 2009.

With the introduction of the loan-to-deposit ratio (LDR) regulation, the LDR has remained continuously below 100% since 2011, as banks' wholesale funding has declined and their deposits have increased.

Banks' loan-to-deposit ratio trend[1] Graph 1




[1] Monthly domestic banks' loan-to-deposit ratio distribution.

Source: Bank of Korea.

## Macroprudential foreign exchange policy

High capital flow volatility has presented major systemic risk in the foreign exchange sector. Against this backdrop, in order to mitigate capital flow volatility, the BOK has implemented macroprudential measures, including leverage caps on banks' FX

[4] After it was introduced in Korea in 2002, the LTV was applied at different levels between 40 and 70% (for banks and insurance companies), depending upon the real estate collateral location and the type of lending institutions.

After its adoption in 2005, the DTI for home mortgage loans in the Seoul Metropolitan region was also applied at differing levels in the 40–60% range, depending on the real estate location and the type of lending institutions.

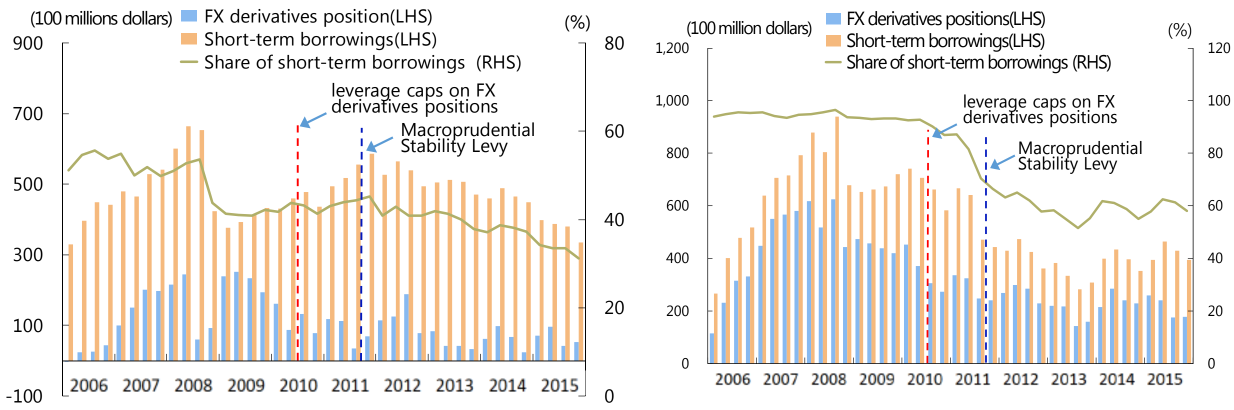
derivatives positions[5] (which took effect in October 2010), and the Macroprudential Stability Levy[6] (which took effect in August 2011).

This policy is considered to have contributed greatly to easing vulnerabilities in the FX sector through reductions in external debt in the banking sector and improvements in maturity structures.

Since the adoption of this policy, the proportion of short-term in the total external debt of foreign bank branches in particular has declined greatly.

FX derivatives positions and short-term borrowings Graph 2

Domestic banks Foreign bank branches




[1] Dotted lines indicate when the regulations were introduced. [2] Quarterly figures.

Source: Bank of Korea.

## Introduction of Basel III macroprudential policies

The countercyclical capital buffer (CCyB) and the capital surcharge on D-SIBs were implemented in 2016.

The CCyB rate is decided every quarter, based on six base indicators[7] such as the total credit-to-GDP gap and other real economic and financial indicators. As of March 2017, the CCyB rate was 0%.[8]

5 Leverage caps on FX derivatives positions were set at 40% of the previous month's capital for domestic banks, and at 200% for foreign bank branches (as of April 2017).

6 Macroprudential Stability Levy (MSL): a uniform levy of 0.1% was imposed on non-deposit foreign currency debts with remaining maturities of one year or less (as of April 2017).

7 Total credit-to-GDP gap, total credit gap, household debt-to-disposable income gap, housing price-to-GDP gap, wholesale borrowing-to-M2 gap, and short-term external debt-to-foreign reserves gap etc.

8 Korea decided on its first level of countercyclical capital buffer accumulation at the end of March 2016, and set it at 0%. There has been no change in this setting (up to the first quarter of 2017).

D-SIBs are designated every year based on the assessment criteria[9] proposed by the BCBS. As of the end of 2016, a total of four bank holding companies and one bank were designated as D-SIBs.

## 2.2 The Bank of Korea's conduct of macroprudential policy

The BOK was given responsibility for achieving financial stability under the revised Bank of Korea Act (which took effect in 2011), but it does not have concrete macroprudential policy tools to pursue its financial stability mandate.

However, it has been involved in the conduct of macroprudential policies by pre-emptively identifying potential risks within the financial system and exploring measures for addressing them in concert with the relevant government agencies.

Through its Financial Stability Report (a biannual report submitted to the National Assembly) and Financial Stability Meetings, the BOK monitors the nation's overall financial stability conditions and issues early warnings of financial risk factors.

From 2017, the BOK has reduced the frequency of its Monetary Policy Board meetings from the previous 12 times to eight per year, and is instead holding Financial Stability Meetings four times a year.[10.]

The BOK has operated its Household Debt Task Force, and sought to obtain micro-data on household debt to analyse the state of household debt on a regular basis and deliberate on effective policy options.

To enhance the effectiveness of its stress tests, the BOK has improved the SAMP (Systemic Risk Assessment Model for Macroprudential Policy) and at the same time it has strengthened its cooperation with the supervisory authorities (through the regularisation of joint stress tests with the Financial Supervisory Service).

Joint inspections are conducted with a focus on identifying systemic risk factors early on, and checking major financial issues.

The BOK has established close cooperative relationships with financial stability related agencies at home and abroad. Through the Macroeconomic and Financial Stability Meetings and the Consultative Group for Managing Household Debt, the BOK shares information on domestic and external financial risk factors with the relevant agencies, and discusses joint countermeasures. The BOK has also been actively engaged in the discussions on global financial regulatory reform led by the FSB and the BCBS.

Together with the government and the supervisory authorities, the BOK has worked for the smooth implementation of international standards such as the countercyclical capital buffer. It has in addition sought to enhance the stability of the payment and settlement systems and the foreign exchange sector. To improve the stability of the payment and settlement systems, the BOK adopted a system in

9 D-SIBs are selected based on their scores in terms of five criteria including their size, substitutability interconnectedness, complexity and country-specific factors.

10 Owing to the BOK's need to enhance its financial stability role in line with the increased macroeconomic and financial volatility at home and abroad, as well as the overhaul of the MPB meeting framework reducing the number of meetings, it has become necessary to hold these Financial Stability Meetings.

February 2012 to provide settlement liquidity through intraday reverse purchase transactions to financial investment businesses and the Korea Exchange.

To strengthen the stability of the FX sector, the BOK has, together with relevant organisations such as the Ministry of Strategy and Finance, pre-emptively operated macroprudential policy measures related to foreign exchange.

## 2.3 Major issues regarding macroprudential policy operations

### Rules versus discretion

Macroprudential policy in Korea is conducted so that systemic risks are assessed through far-reaching monitoring of macroeconomic and financial indicators, and timely policy instruments are adopted as needed, rather than by following fixed rules.

As is widely known, it is difficult to precisely determine or gauge how far systemic risks have accumulated and so, if indicators are used to set thresholds for action, there is a high likelihood that discretionary decisions will also need to be made.

### Model-based versus indicator-based

It is difficult to define a single indicator that broadly represents financial stability, the target of macroprudential policy, and various policy instruments exist. The BOK, therefore, does not rely on specific indicators or models, but takes various indicators and model results into overall consideration in making its policy decisions.

For indicators, the BOK uses housing prices, financial institution leverage, and financial market and supervision information, as well as the credit-to-GDP ratio.

In the course of measuring comprehensive systemic risks, a wide range of econometric and statistical models[11] have been used, but additional studies are still required, using macroeconomic models, in order to calibrate the various policy instruments to the systemic risk indicators measured.

### Range of policy instruments

Given that macroprudential policies regulate financial institutions' business activities, policy instruments should be introduced so as to avoid excessively constraining financial institutions.

There is a need to reduce the potential for redundancy among regulations,[12] which could emerge if different rules are implemented side-by-side.

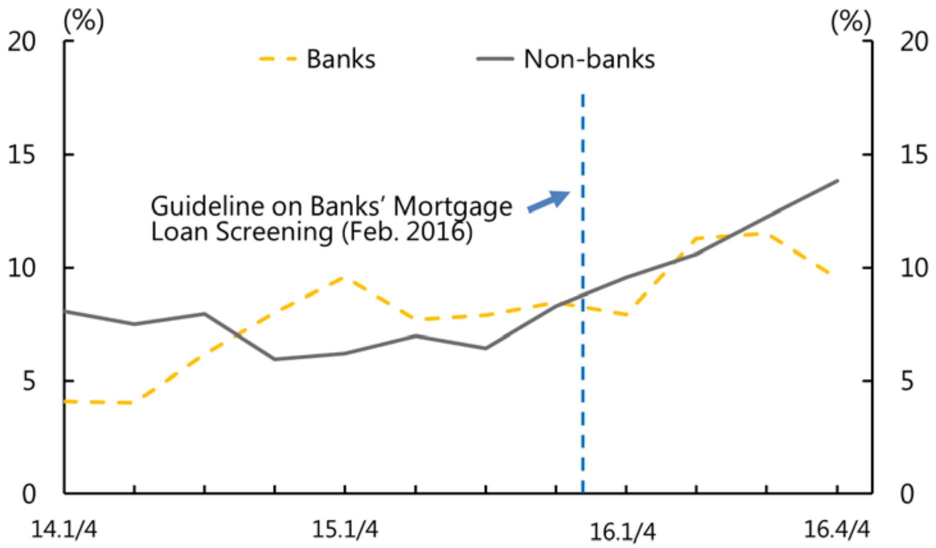
However, in implementing macroprudential policies, the relevant agencies should also seek to eliminate any regulatory blind spots, so as to ensure that non-compliance by affected institutions does not dilute the policy effects.

[11] Stress tests, analysis of connectivity, contingent claims analysis, analysis of default probabilities, network analysis, and other models are used.

[12] In Korea's case, the potential exists for redundancy vis-à-vis the Basel Ⅲ liquidity regulations, including between the current LDR ratio and the NSFR regulations that are being implemented.

Korea has tried to curb the rising trend in household debt by introducing LTV and DTI regulations and strengthening the loan-screening process,[13] but household loans have nevertheless increased, led by loans not subject to those regulations such as unsecured loans from non-banking institutions, or loans secured by collateral other than housing, and collective mortgage loans.[14] As a result, the policy effects have been diluted.

Rate of increase in household debt by financial institutions[1] Graph 3




[1] Year-on-year, quarterly figures.

Source: Bank of Korea.

## Relation to other policies

The fact that the financial and the business cycles often fail to coincide[15] can hinder effective macroprudential policy implementation.

Despite the accommodative monetary and fiscal policies conducted since the Global Financial Crisis, the real sector recovery has been slow due to increasing domestic and overseas uncertainties. Credit to the private sector has continued to

[13] The Guideline on Banks' Mortgage Loan Screening, which aims to strengthen the screening of borrowers' debt repayment capacities and increase the share of fixed rate and amortising loans, was implemented from February 2016. The guideline was first applied to banks (in the Seoul Metropolitan Area from February 2016, and in the rest of the country from May 2016), and as a result demand for loans has moved from banks to non-banks, and non-bank financial sector household lending has risen greatly. The guideline has meanwhile also been applied to insurance companies since July 2016, and to mutual credit cooperatives since March 2017.

[14] Collective mortgage loans are loans offered to a group of home buyers who have submitted pre-orders even before construction begins. Often buyers make instalment payments throughout the construction period, and they are provided with group loans to make their instalment payments.

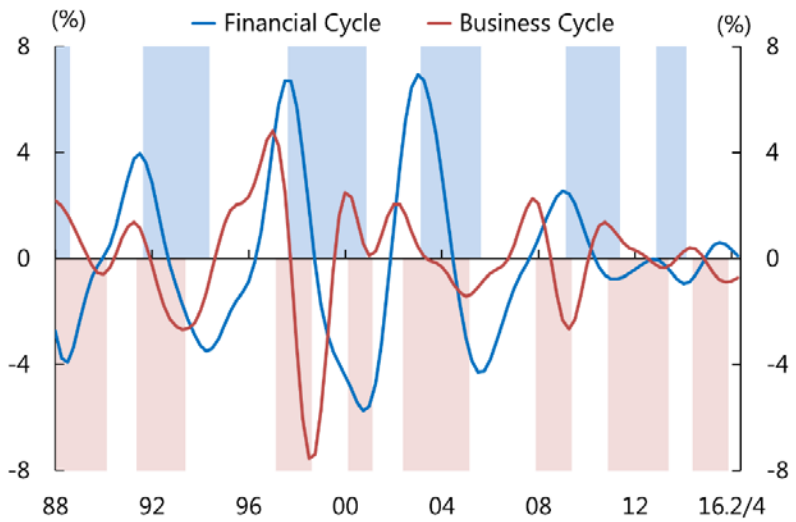
[15] Since the global financial crisis, the link between the financial and the real cycles has weakened overall, as the two cycles have shown decoupling movements.

expand, with strong growth in household credit offsetting a slowdown in business credit.

In this situation, if macroprudential policy tightening measures that affect the credit market as a whole are adopted to curb the strong growth in household credit, then credit supply to the real sector will also decline, exacerbating the real economic slowdown.

Microeconomic policy measures are needed, so that the policy effects can be focused on the various vulnerable components of private sector credit (eg unsecured loans, loans to self-employed entrepreneurs, collective mortgage loans, etc).

Financial and business cycle trends[1] Graph 4




[1] The upper shaded areas indicate financial cycle downturns, and the lower shaded areas downturns of the business cycle.

Source: Bank of Korea.

## 3. Communication concerning macroprudential policies

### 3.1 Need for communication

Since macroprudential policies can affect various market participants, effective communication strategies are needed so as to enhance the policy effects.

When considering the introduction of policy measures, active external communication is required at these initial stages, in order to help market participants appreciate the need for such measures.

It is important in addition to publish analyses of the effects of previous policy measures, so that market participants can make decisions based upon rational expectations of future policy effects.

## 3.2 The BOK experience

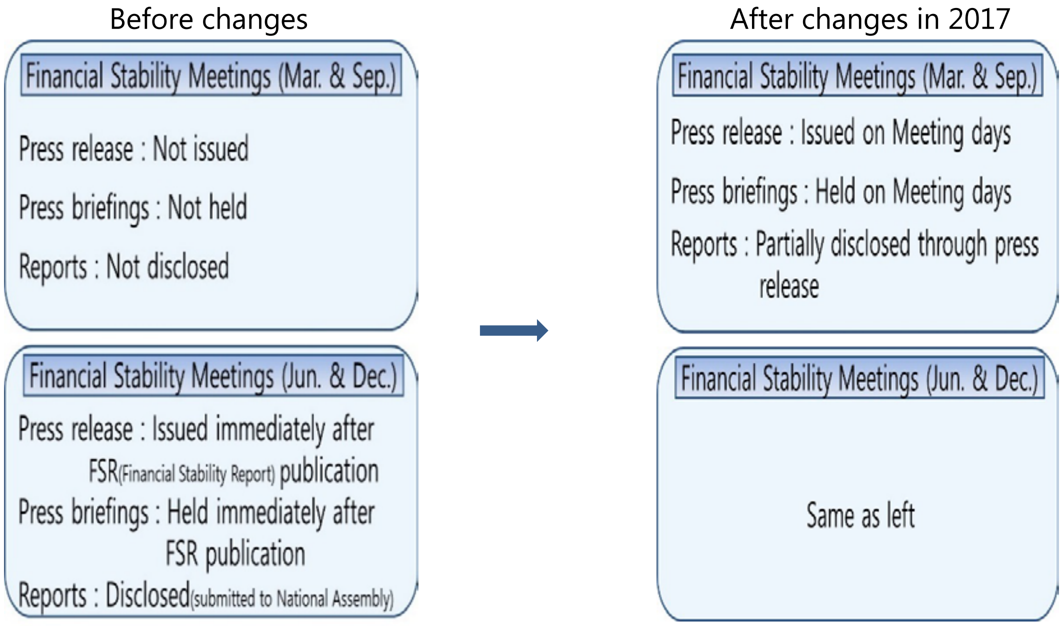
The BOK has no financial stability policy instruments, but performs a signalling function related to financial stability conditions through a variety of channels.

The BOK calls attention to potential risk factors at home and abroad through its Financial Stability Report, and its Governor's press conferences and meetings with heads of financial institutions, and also provides information on the effects of its policies and suggests timely policy measures.

The BOK's monetary policy decision meetings, previously held 12 times a year, are being held eight times starting from 2017. As a result, market participants have a growing interest in and expectations for the new Financial Stability Meetings that are held four times a year. The BOK is therefore working to significantly strengthen its communication related to these meetings.

Besides the release of the MPB meeting minutes, two weeks after those meetings, following the Financial Stability Meeting in March 2017, the BOK started to issue a press release on major issues discussed at the meeting, and also to hold a press briefing.

External communication related to financial stability — Graph 5




Source: Bank of Korea.

However, in circumstances where macroprudential policy might conflict with monetary or fiscal policy, information-sharing and prior consultations among the related institutions will be important in order to ensure consistent messages on future policy directions.

## References

Bank of Korea, "Financial stability report", December 2016.

Financial Service Commission, "Financial policy direction for 2017", Press Release, January 2017.

IMF, "Key aspects of macroprudential policy", Policy Paper, June 2013.